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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,711	07/08/2003	Yeong-Seop Lee	5000-1-291	9441
33942	7590	05/18/2005	EXAMINER	
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			HERRING, LISA L	
			ART UNIT	PAPER NUMBER
			1731	
DATE MAILED: 05/18/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/615,711

Applicant(s)

LEE ET AL.

Examiner

Lisa Herring

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "312" and "320" have both been used to designate "second copper pipe" on pg. 2 lines 10 and 12 of the specification. Appropriate correction is required, such as corrected specification or drawing sheets. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Interpretation***

2. In Claim 4, the term "the cooling apparatus body" is interpreted as equivalent to "the cooling body" recited in Claim 1.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8, 10, 11, and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Linden et al. (4,966,615) in view of Sapsford (5,568,728).

Regarding Claims 1, 8, 11, and 12, Linden discloses a cooling apparatus in the drawing process of an optical fiber comprising the items discussed below:

- i) a cooling body (6, Fig. 1) extending along a longitudinal direction of a drawn optical fiber (3) (Fig. 1),
- ii) the cooling body (6) being closed by a sealing cap through which cooling gas can be supplied into the cooling body. The sealing cap in Linden (Fig. 2) is structurally disclosed by Linden as the section of the cooling body (6) comprising seals (11a) and (12a) along with cooling gas inlet 13 and cooling gas outlet 14, since these items structurally meet the criteria of the sealing cap, and
- iii) at least one turbulence generator mounted within the cooling body to surround the drawn optical fiber for activating a molecular flow of the cooling gas supplied into the cooling body. The turbulence generator mounted in the cooling body is structurally disclosed by Linden (Fig. 2) as the partition plates (19) with openings (20), since Linden (Col. 3, lines 16-20) discloses the openings (20) of the partition plates are so dimensioned that the cooling flows turbulently through the opening from a compartment (22) separated by the partition plate to the following compartment (23).
- iv) the turbulence generator, such as partition plate (19) is provided with at least one slot, such as opening (20) for enabling the turbulence generator to

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communicate with the inside of the cooling body through which the drawn optical fiber passes (Claim 8)

Additionally Linden discloses cooling water flowing in space (16) (fig. 3) and cooling gas flowing through the chambered sections of the cooling body (Col. 1, lines 43-48 and Fig. 2). However, Linden fails to disclose having a left cooling body part and a right cooling body part and wherein the left and right cooling body parts are further supplied with cooling water and with helium gas. However, Sapsford discloses a similar chambered cooling device as having a left and right cooling body parts (Figs. 2, 3, and 4), which also contain cooling water pipes (14, 15, 16, 17) and helium gas (abstract). Sapsford further discloses the left and right cooling body parts are separately hinged so as to open the interior of the cooler, which greatly facilitates the initial threading of the optical fiber through the cooler. Since Linden and Sapsford are analogous art and are from a similar problem solving area, such as cooling a fiber with a chambered cooling body with cooling water and helium gas, it would have been obvious to one skilled in the art at the time the invention was made to modify the apparatus of Linden with a hinged left and right cooling body parts, which further contain helium gas and pipes for flowing cooling water, for the advantage of facilitating the initial threading of the fiber, as disclosed by Sapsford, since the left and right body cooling parts can be opened.

Regarding Claims 2, 3, and 10 as can be seen in Fig. 2 of Linden, multiple partition plates (19), which are turbulence generators, are mounted along the longitudinal direction of the cooling body in a stacked structure, which is symmetrical.

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Additionally, Sapsford discloses in Fig. 3 the symmetry of spherical chambers, which also generate turbulent flow.

4. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linden et al. (4,966,615) in view of Sapsford (5,568,728) as applied to claim 1 above, and further in view of Hisashi et al. (JP6219789). Linden and Sapsford fail to disclose the turbulence generator is comprised of cooling fans or the turbulence generators comprises at least one cooling fan for producing turbulence. However, Hisashi discloses a cooling body (5) employed in the drawing process of an optical fiber with a different turbulence generator. Hisashi discloses circulation fans in Drawing 3 (13a, 13b, 13c, and 13d) and Drawing 4 (21a, 21b, 21c, and 21d). The fans circulate flow, which is interpreted as having the ability to create turbulence. Since the fans of Hisashi and the partition plates (19) of Linden are both from a similar problem solving area, such as redirecting gaseous flow in a cooling body for drawing an optical fiber preform, the references are analogous art and can be substituted. Therefore the fans, as disclosed by Hisashi, can also be symmetrically mounted as a turbulence generator or generators. Accordingly, it would have been obvious to one skilled in the art at the time the invention was made to modify Linden in view of Sapsford wherein the turbulence generator is comprised of cooling fans or the turbulence generators comprise at least one cooling fan for producing turbulence, since it is an alternate turbulence generator, as disclosed by Hisashi.

5. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linden et al. (4,966,615) in view of Sapsford (5,568,728) as applied to claim 1 above,

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and further in view of Ghani et al. (2003/0205066). Linden and Sapsford fail to disclose the following:

- a) the cooling body further comprises at least one vibration dampening jig located between the turbulence generator and the drawn optical fiber to uniformly maintain the quality of cooling the optical fiber,
- b) at least one vibration-damping jig is positioned along the drawn optical fiber
- c) the cooling apparatus body comprises two or more vibration-damping jigs
- d) wherein the vibration-damping jigs are symmetrically mounted in the cooling body

Regarding Claim 4, Ghani (Figs. 3, 4, 5, and 6) discloses a porous means for minimizing flow-induced vibration of the fiber. The porous means is a disk (55), which distributes gaseous coolant uniformly before introduction into the compartments to minimize any flow induced vibration of the fiber (paragraph [0036]). The partition plates disclosed by Linden also contain openings 21 which distribute gaseous coolant uniformly before introduction into the compartments, which increases contact area between the gas and the cooling water space. The openings 21 of partition plates 19 can be modified to include a porous disk to further distribute the gaseous coolant uniformly before introduction into the next compartment. This porous disk is considered structurally to be equivalent to a vibration jig, since the disk functions to minimize flow induced vibration of the fiber. The openings 21 of partition plates 19, as disclosed by Linden, and the porous disk 55, as disclosed by Ghani are from a similar problem solving area and therefore analogous art, since both distribute flow in a fiber cooling

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apparatus. Accordingly, it would have been obvious to one skilled in the art at the time the invention was made to modify the openings 21 of partition plate 19 in the apparatus of Linden, with a porous disk 55, as disclosed by Ghani, for the advantage of further distributing the gaseous coolant uniformly before introduction into the compartments to minimize any flow induced vibration of the fiber.

Regarding claims 5-7, as proposed in claim 4, the addition of the porous disk to the openings 21 of all partition plates 19 in the apparatus of Linden, would provide the following:

- 1) at least one vibration damping jig positioned along the draw optical fiber
- 2) two or more vibration-damping jigs
- 3) vibration damping jibs symmetrical mounted in the cooling body, since the openings 21 of all partion plates 19 are symmetrical

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Herring whose telephone number is 571-272-1094. The examiner can normally be reached on Mon-Fri. 7:30 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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